

## CLAIMS

What is claimed is:

1. A broadhead arrowhead comprising:

a ferrule having a first end and a second end;  
at least one main blade assembly coupled to and  
extending outwardly from said ferrule;  
at least one deployable blade assembly, each coupled  
to said ferrule by a pivot shaft;  
wherein said deployable blade assembly further  
comprises a semi-circular fourth blade portion  
integral to a first end of an elongated third blade  
portion, and a flag-shaped fifth blade portion  
integral to a second end of said third blade  
portion;  
wherein said ferrule further comprises a deployable  
blade slot cut into the side of said ferrule for  
each said deployable blade assembly;  
wherein said fourth blade portion fits into said  
deployable blade slot;  
wherein said deployable blade slot is substantially  
coplanar with a longitudinal axis of said ferrule  
and is of a depth and geometry that permits each  
said deployable blade to rotate freely about said  
pivot shaft;

wherein said ferrule further comprises a cylindrical cavity that begins at the leading face of said first end of said ferrule and continues down a longitudinal axis of said ferrule to a depth approximately equal to the location of said at least one pivot shaft;

wherein said cavity contains a trigger, comprising a solid cylinder such that said trigger can slide freely within said cavity;

wherein said trigger includes a trailing surface that interfaces with a ledge on each said fourth blade portion when said deployable blades are in the closed position; and

wherein said cavity further contains a mechanical tensioner located between the leading face of said trigger and the trailing edge of said main blade such that said trailing edge of said main blade compresses said tensioner, which in turn urges said trigger in the aft direction.

2. An arrowhead according to claim 1,

wherein both said third blade portion and said fourth blade portion are disposed in a plane at least substantially parallel to a longitudinal axis of

said ferrule and said fifth blade portion extends at  
    an angle to the plane of said third blade portion;  
    and

    said fifth blade portion is preferably continuously  
    curved, wherein said deployable blade assembly has  
    an airfoil-type shape.

3. An arrowhead according to claim 2,  
    further comprising a plurality of said deployable  
    blade assemblies disposed substantially  
    symmetrically around the longitudinal axis of said  
    ferrule.
4. An arrowhead according to claim 3, wherein said fifth  
    blade portion has a leading edge region disposed at an  
    angle to said ferrule.
5. An arrowhead according to claim 4, wherein said leading  
    edge region is disposed at an angle to said ferrule in  
    the range of about 5 degrees and about 45 degrees.
6. An arrowhead according to claim 5, wherein said leading  
    edge region is disposed at an angle to said ferrule in  
    the range of about 5 degrees and about 35 degrees.

7. An arrowhead according to claim 3, wherein said fifth blade portion has a length of between 20% and 50% of the overall length of said deployable blade assembly.
8. An arrowhead according to claim 3, wherein said continuously curved fifth blade portion has a radius of curvature of between about 0.2" and 0.5".
9. An arrowhead according to claim 3, further comprising at least two deployable blade assemblies disposed substantially symmetrically around the longitudinal axis of said ferrule at an angle of approximately 180 degrees from each other.
10. An arrowhead according to claim 3, further comprising means for mounting said arrowhead to an arrow shaft.
11. An arrowhead according to claim 3, further comprising means for limiting the deployment angle of said deployable blade assemblies.
12. An arrowhead according to claim 11, wherein said means limits the maximum deployment angle of said deployable

blade assemblies in the range of about 90 degrees and 170 degrees.

13. An arrowhead according to claim 12, wherein said means limits the maximum deployment angle of said deployable blade assemblies in the range of about 100 degrees and 135 degrees.

14. A broadhead arrowhead comprising:

a ferrule having a first end and a second end;

a main blade assembly coupled to and extending outwardly from said ferrule in two directions diametrically opposite each other about a longitudinal axis of said ferrule;

at least one deployable blade assembly, each coupled to said ferrule by a pivot shaft;

wherein said main blade assembly has an air-foil type shape comprising:

a first substantially planar blade portion disposed in a plane at least substantially parallel to the longitudinal axis of said ferrule and

two second portions, wherein said second portions are each disposed at an angle to the plane of said first planar portion and said second portions are

also dispose at an angle to the longitudinal axis of said ferrule;

wherein said second portions are both generally continuously curved and are both angled relative to said first planar portion in the same rotational direction; and

wherein said first portion of said blade assembly is coupled to said ferrule;

wherein said deployable blade assembly further comprises a semi-circular fourth blade portion integral to a first end of an elongated third blade portion, and a flag-shaped fifth blade portion integral to a second end of said third blade portion;

wherein said ferrule further comprises a deployable blade slot cut into the side of said ferrule for each said deployable blade assembly;

wherein said fourth blade portion fits into said deployable blade slot;

wherein said deployable blade slot is substantially coplanar with a longitudinal axis of said ferrule and is of a depth and geometry that permits each said deployable blade to rotate freely about said pivot shaft;

wherein said ferrule further comprises a cylindrical cavity that begins at the leading face of said first end of said ferrule and continues down a longitudinal axis of said ferrule to a depth approximately equal to the location of said at least one pivot shaft;

wherein said cavity contains a trigger, comprising a solid cylinder such that said trigger can slide freely within said cavity;

wherein said trigger includes a trailing surface that interfaces with a ledge on each said fourth blade portion when said deployable blades are in the closed position; and

wherein said cavity further contains a mechanical tensioner located between the leading face of said trigger and the trailing edge of said main blade such that said trailing edge of said main blade compresses said tensioner, which in turn urges said trigger in the aft direction.

- } 15. An arrowhead according to claim 14,  
wherein both said third blade portion and said fourth blade portion are disposed in a plane at least substantially parallel to a longitudinal axis of

said ferrule and said fifth blade portion extends at  
    an angle to the plane of said third blade portion;  
    and

    said fifth blade portion is preferably continuously  
    curved, wherein said deployable blade assembly has  
    an airfoil-type shape.

16. An arrowhead according to claim 15,  
    further comprising a plurality of said deployable  
    blade assemblies disposed substantially  
    symmetrically around the longitudinal axis of said  
    ferrule.
17. An arrowhead according to claim 16, wherein said fifth  
    blade portion has a leading edge region disposed at an  
    angle to said ferrule.
18. An arrowhead according to claim 17, wherein said  
    leading edge region is disposed at an angle to said  
    ferrule in the range of about 5 degrees and about 45  
    degrees.
19. An arrowhead according to claim 18, wherein said  
    leading edge region is disposed at an angle to said

ferrule in the range of about 5 degrees and about 35 degrees.

20. An arrowhead according to claim 16, wherein said fifth blade portion has a length of between 20% and 50% of the overall length of said deployable blade assembly.
21. An arrowhead according to claim 16, wherein said continuously curved fifth blade portion has a radius of curvature of between about 0.2" and 0.5".
22. An arrowhead according to claim 16, further comprising at least two deployable blade assemblies disposed substantially symmetrically around the longitudinal axis of said ferrule at an angle of approximately 180 degrees from each other.
23. An arrowhead according to claim 16, further comprising means for mounting said arrowhead to an arrow shaft.
24. An arrowhead according to claim 16, further comprising means for limiting the deployment angle of said deployable blade assemblies.

25. An arrowhead according to claim 24, wherein said means limits the maximum deployment angle of said deployable blade assemblies in the range of about 90 degrees and 170 degrees.
26. An arrowhead according to claim 25, wherein said means limits the maximum deployment angle of said deployable blade assemblies in the range of about 100 degrees and 135 degrees.
27. An arrowhead according to claim 16, wherein said second portion has a length of between about 20% and 50% of the overall length of said main blade assembly.